Transition of Research Applications to Climate Services (TRACS)
FY2008 Program Information Sheet (July 2007)

> *Application of the best available science and technology is essential to meeting NOAA's mission. This demands an operations enterprise able to apply new research in a timely manner, a research enterprise focused on understanding and applying emerging science and technology to user needs, and effective and efficient processes and procedures to ensure the timely transfer of research to operational status or information services in meeting mission responsibilities.*[1]

NOAA's Climate Program Office has established a Regional Decision Support (RDS) Program to support users of climate information and forecasts at multiple spatial and geographical scales. The RDS portfolio helps NOAA identify and serve the nation's needs for climate information to support decision making through an integrated program of: 1) research and assessment related to impacts and decision making needs; 2) transition of research to operations and information services; and 3) operational production and delivery of local and regional climate services that can be utilized to enhance risk and adaptive management options. NOAA's RDS activities include efforts managed by the research and operational entities of the agency, and involve partnerships with other agencies, universities, data centers, and stakeholders. The Climate Assessments and Services Division (CASD) within the Climate Program Office houses the RDS Program's research and transition capabilities (see above #1 & #2) including the Sectoral Applications Research Program (SARP), the Regional Integrated Sciences and Assessments (RISA) and Transition of Research Applications to Climate Services (TRACS) Programs.[2]

The TRACS Program transitions experimentally mature climate information tools, methods, and processes, including computer related applications (e.g. web interfaces, visualization tools), from research mode into settings where they may be applied in an operational and sustained manner. TRACS primary goal is to generate sustained delivery of useful climate information products

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[1] **NOAA Administrative Order (NAO) 216-105: POLICY ON TRANSITION OF RESEARCH TO APPLICATION** <http://www.corporateservices.noaa.gov/~ames/NAOs/Chap_216/naos_216_105.html>:

[1,2] **Definitions:**

Transition: The act of passing from one state, place, or stage to another; the act of handing over something to another person (The American Heritage® Dictionary of the English Language, Fourth Edition copyright ©2000)

Research: Systematic study directed toward fuller scientific knowledge or understanding of the subject studied.

***Application(s)*:** Information Services and Operations

Information Services: Timely production and delivery of interpreted and/or synthesized data, decision tools, and scientific knowledge and understanding to decision and policy makers, scientific community, and the public.

Operations: Sustained, systematic, reliable, and robust mission activities, with an institutional commitment to deliver appropriate, cost-effective products and services.

Climate Services: The timely production and delivery of useful climate data, information, and knowledge to decision makers ("A Climate Services Vision: First Steps Toward the Future" (2001), Board on Atmospheric Sciences and Climate (BASC), National Research Council)

and services to local, regional, national, and international decision and policy makers. TRACS seeks not only to support implementation of these transitions, but also to learn from partners how to better accomplish technology transition processes for public goods applications and improved risk management. The title TRACS, besides evoking a focus of being "on-track", should also call attention to three key elements and their interplay. These activities include, transitions (i.e. a focus on partnerships where technology hand-offs occur), research applications (i.e. experimentally developed and tested, end-user-friendly information to support decision making), and climate services (i.e. the routine and timely delivery of that information, including via partnerships).

Guidance

What TRACS is?
TRACS supports partnerships to transition climate time-scale products and services. TRACS is designed to compliment on-going research partnerships and catalyze interactive learning among researchers, operational entities, extension agents, and end-users developed under the RDS SARP and RISA Programs—or in other similar ventures involving NOAA and its stakeholder communities. TRACS should build bridges between decision support research and operations capabilities and partners. TRACS proposals should focus on developing means of communication and feedback, and on deep engagement with the operational and end-user communities over a finite period, but should also help establish relationships and trust that will endure over time. TRACS is intended to transition research applications that have been tested in practice "downstream" of major research activities, have the potential to be reliably applied, and are on the cusp of being ready to "hand-off" for regular and sustained delivery and/or use. TRACS may help facilitate transition into applications of products and services developed in "test-beds". TRACS proposals may focus on local, regional, or national scale decision support tools and systems. TRACS focuses on climate time-scales, but welcomes work on the interaction among climate and weather research and decision-making. TRACS proposals should rigorously identify and evaluate the benefits to society of the transition project.

What TRACS is not?
TRACS is not an operational or services activity by itself, but by design functions as a bridge to effect research transitions through partnerships with operational entities. TRACS does not support major "upstream" research and development (R&D) for observing, modeling, or forecast systems, including the funding of "test-beds". TRACS is not intended to be a means to develop "from scratch" end-to-end research applications, to support initial contact with operational or user partners, or to explore more broadly the development of climate services (these activities are supported more generally by the NOAA SARP and RISA Programs, along with the rest of the Climate Program Office portfolio).

In Summary: the objective of TRACS is to fund projects to develop or enhance climate products and services, build capacity among decision makers to understand, access, and use climate-related decision support tools or technologies, and ensure that NOAA and its partners (federal,

regional, state, and the private sector) are capable of routinely delivering climate information to the public.

Elements for FY2008 TRACS Proposals:
Because TRACS is based on a collaborative partnership model (see Figure 1), it is important that proposals define the interactions among participants representing research, operations, extension, and decision-makers (end-users), and the particular tasks or activities each will be accomplishing. It is recommended that partners should be identified and defined explicitly within the proposal including at least one research and one operational entity. ALL partners are encouraged to participate in preparing the proposal, particularly the operational or applied portions. Reviewers should be able to identify that the information tools to be transitioned are mature (i.e. ready to be applied), that the project is doable in the time allowed, that there is strong support and involvement from non-researchers, that there is a high likelihood that there will be successful transition that will be sustained after the project ends, and a clear link to societal benefits can be established. Proposals will be rated on scientific merit (i.e. is the science advanced enough to make a difference in decision making processes, or to change decision behavior?) and applicability (i.e. have the requisite partnerships been established and the potential project benefits been demonstrated at least experimentally?)

TRACS encourages proposals that knit together researchers with current climate services activities at one or more of the following organizations representing operational, extension or decision maker communities: National Weather Service (NWS) Regional Headquarters, NWS Weather Forecast Offices (WFOs), NWS River Forecast Centers (RFCs), NOAA/NWS Climate Prediction Center (CPC), Climate Test Bed (CTB), Hydro-meteorological Testbed (HMT), National Climate Data Center (NCDC), Regional Climate Centers (RCCs), the International Research Institute for Climate and Society (IRI), state climatologist's offices (SCOs), RISA Teams, the National Drought Mitigation Center (NDMC), the National Integrated Drought Information System (NIDIS), US Drought Portal (USDM), US Drought Monitor, other federal, state, and local agencies or extension services, and the private sector.

The TRACS Program is open to the climate and weather research communities, including the private sector. The tools transferred may have been developed, tested, and the benefits evaluated previously under other Climate Program Office Programs. TRACS is designed to accommodate four types of transition project partnerships:

- Within NOAA units
- From external partners to NOAA
- From NOAA to external partners
- Among external (NOAA) partners (using NOAA funds)

Drought Focus

In June 2004, the Western Governors unanimously adopted a report entitled, "Creating a Drought Early Warning System for the 21st Century: The National Integrated Drought Information System (NIDIS)".[3] The Governors proposed a system that would provide all water users the ability to obtain drought information in real time in order to understand their risks and to be able to plan accordingly. In December 2006, the President signed the NIDIS bill into law. In support of NIDIS implementation, NOAA's Climate Program Office in FY2008 is providing funding for projects that help society cope with drought at all time-scales, including through the application of paleo-climate information, monitoring, forecasting, and current and future scenarios.

In FY2008: TRACS will support transition of drought related decision support tools, methods, and processes, particularly those involving working with stakeholders. Proposals should focus on developing and transitioning products to support drought planning and the communication of climate impact information tailored to specific regional needs, including products and services of relevance to the US Drought Portal (USDP) web initiative and complying with USDP technical standards and requirements.[4] The USDP will improve access to and sharing of drought-related data and information locally, regionally, and nationally. TRACS funding will accelerate the transition of research activities into improved climate information and increase applicability of that information to the needs of the external community enabling businesses, academia, and government agencies to minimize the impacts of drought. In FY2008, this effort has been made possible through the CASD Coping with Drought initiative in partnership with the NIDIS Office and RDS Program.

Checklist

It is suggested that successful proposals should include the following elements, as well as address the program goals and objectives. These conditions are:

- Clearly defined climate time-scale dimension to the problem and solution/tools, even if applied to weather time-scale decision support;
- Clearly defined decision maker, research, operations and extension partners--including all participants involved in proposal preparation is highly recommended;
- A management plan: including project description, roles and responsibilities of partners (i.e. team interactions), and detailed methodology and timeline (i.e. how components will be integrated and implemented), including duration less than 5 years;
- Benefit analysis (rigorous valuation of socio-economic, ecosystem, or other measurable benefits), including outline of methodological approaches for evaluation;
- Address post audit evaluation (validation, verification, refinement, maintenance, etc.) to determine at the end of the project if the transition has been achieved and is sustainable;
- Formal agreement between participants (if possible) - represented as signatures on the proposal and/or more formal documents, such as, Letters of Support or Memoranda of

[3]Creating a Drought Early Warning System for the 21st Century: The National Integrated Drought Information System (NIDIS) <www.westgov.org/wga/initiatives/drought/>

[4]Drought Portal Presentation <www.joss.ucar.edu/joss_psg/meetings/Meetings_2006/nidis/presentations/Owen.pdf>

Understanding (MOU);
- Demonstrate generally how the project supports NOAA mission goals.

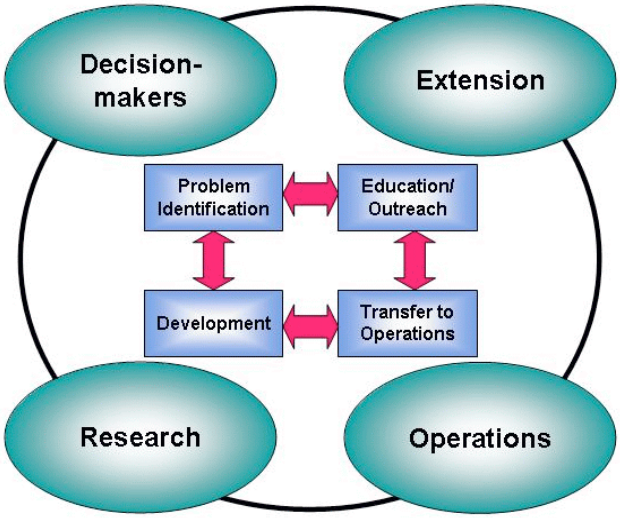
List of Suggested Reviewers (optional)
Proposers are invited to include a list of suggested reviewers who they believe are especially well qualified to review the proposal. These suggestions are optional and the decision whether or not to use the suggested reviewers remains with the Program Manager. All reviewers will eventually be asked to sign a conflict of interest statement.

Funding Levels
TRACS project requests usually range from approximately $50,000 to $300,000 over 12-36 months (with a maximum of around $500K over 60 months). Abstracts for currently funded TRACS projects are available at:
<http://www.climate.noaa.gov/index.jsp?pg=./cpo_pa/cpo_pa_index.jsp&pa=nctp&sub=3>

TRACS Management
Funded activities will be required to provide semi-annual updates demonstrating that project milestones are being met. At the end of the project, in addition to a final project report, evidence must be provided to the program manager of at least experimental success of a product or service in operational mode. All FY2008 TRACS awards will be Cooperative Agreements that enable "substantial government involvement" from NOAA, as appropriate.

For further information, investigators may contact the NOAA program manager, Mr. Josh Foster NOAA Climate Program Office, 1315 East West Highway, 12th Floor, Silver Spring, MD 20910 (301-734-1218; josh.foster@noaa.gov).

Figure 1: TRACS Partnership Model


Decision-makers
Extension
Problem Identification
Education/ Outreach
Development
Transfer to Operations
Research
Operations